



All things analysis

EACH YEAR the AWRI helpdesk answers a number of enquiries about wine analysis including how to interpret a result or how to troubleshoot a laboratory issue. The following questions and answers represent some frequent and some more obscure questions received in the recent past.

Q. IS THERE A LIMIT FOR PHOSPHOROUS (PHOS) ACID IN DAP THAT IS USED AS A YEAST NUTRIENT IN WINEMAKING?

There is no actual 'limit' for phos acid in diammonium phosphate (DAP). A problem can arise, however, if phos acid is transferred to wine as a result of using DAP.

Phos acid has regulatory limits in most of Australia's major export destinations and some have a limit of 'no detectable residues' as an MRL.

Studies conducted at the AWRI have shown that a residue of phos acid can be detected in wine (> 0.1 mg/kg) when a typical addition of DAP, added at the beginning of fermentation, contains residues of > 0.1 g/kg.

Q. I HAVE ADDED CMC, SO WHAT IS THE BEST METHOD FOR CHECKING COLD STABILITY?

The addition of carboxyl methyl cellulose (CMC) to cold stabilise white wines is gaining traction in the Australian wine industry, with many wineries using this processing aid to replace more energy intensive cold stabilisation methods.

One question that has been raised is the best cold stability test to use when checking the effectiveness of a CMC addition.

Testing for cold stability is highly recommended for all wines; however when CMC has been used, it is recommended that a combination of the three-day minus four degree test (brine test) and the saturation temperature test (Tsat) be used.

The brine test gives information on the current stability of the wine and the Tsat gives an indication of potential future stability (i.e. the wine's potential to become unstable over time).

Q. WHEN IS THE BEST TIME TO ANALYSE FOR YAN?

Measuring yeast assimilable nitrogen (YAN) in grapes/juice provides useful information about the amount of nitrogen available for yeast to use during fermentation.

If YAN levels are found to be low, additions of DAP or other sources of nitrogen can be made to help prevent fermentation problems. The timing of YAN analysis is important, and if possible the analysis should be conducted as soon as possible after harvest.

If this is not practicable, samples can be frozen and analysed when convenient.

As soon as there is any sign of fermentation, nitrogen is already being utilised by yeast and/or bacteria, so to obtain the most accurate result, it is recommended that YAN analysis be



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Very low production of negative sulphur compounds and compounds combining the SO₂ enhances the expression of black fruit notes and contributes to decrease the perception of the green character.

FERMENTATION CHARACTERISTICS

- Alcohol tolerance: up to 16 % vol.
- Wide range of optimal temperatures: 20 - 35°C.
- Low nitrogen requirements.
- Moderate volatile acidity production.
- Regular fermentation kinetics.
- Good malolactic fermentation compatibility.

ORGANOLEPTIC CHARACTERISTICS

- Very low production of negative sulphur compounds (including SO₂ and H₂S) and of compounds binding SO₂.
- Masked perception of green characters.
- Aromatic freshness and expression of black fruit notes.
- Great smoothness of mouthfeel.



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performed on the last maturity sample prior to harvesting, and before any fermentation commences.

Q. WHEN ANALYSING VOLATILE ACIDITY VIA STEAM DISTILLATION, WHY IS HYDROGEN PEROXIDE ADDED BEFORE PERFORMING THE ANALYSIS?

When performing steam distillation there are other compounds besides acetic acid that are steam distillable and can contribute to false higher results.

Hydrogen peroxide is added to bind up free sulfur dioxide and wines are also 'degassed' to remove carbon dioxide that might otherwise be converted to carbonic acid and also influence the result.

Q. MY PH RESULTS SEEM TO VARY ONE DAY TO THE NEXT, WHAT SORT OF TOLERANCE IS ACCEPTABLE?

A typical tolerance for pH measurement is ± 0.05 pH units. The tolerance or repeatability of your own laboratory method is something that you can determine by analysing the same sample over a number of different occasions and different operators (if applicable).

By determining the standard deviation of this data, you can determine the uncertainty of measurement for your pH analysis. This technique can also be applied to other laboratory analyses where required.

Q. CAN YOU ANALYSE FOR HYDRAULIC OIL IN JUICE OR WINE?

This is not an easy analysis to undertake and is not usually possible. The waxy coating of grape skins contains compounds with a similar structure to the compounds found in hydraulic oil, making them very difficult to distinguish even when high contamination levels occur.

If you experience a contamination issue, the best approach is to isolate the batch, take photos of the presence of oil and contact your insurance company.

Q. HOW OFTEN SHOULD I REPLACE MY SOLUTIONS WHEN PERFORMING SULFUR DIOXIDE (SO₂) ANALYSIS?

It is the AWRI's experience that solutions do degrade for a variety of reasons, some faster than others.

It is recommended that the hydrogen peroxide solution (0.3%) used in SO₂ analysis should be made up fresh every day. The other important reagent for SO₂ determination is the 0.01M sodium hydroxide titrant, which is also used for titrating when performing VA by steam distillation.

This solution (whether you make it up or purchase at a known concentration) should be standardised weekly.

For more information about wine analysis, please contact the AWRI helpdesk on helpdesk@awri.com.au or 08 8313 6600. **GW**

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